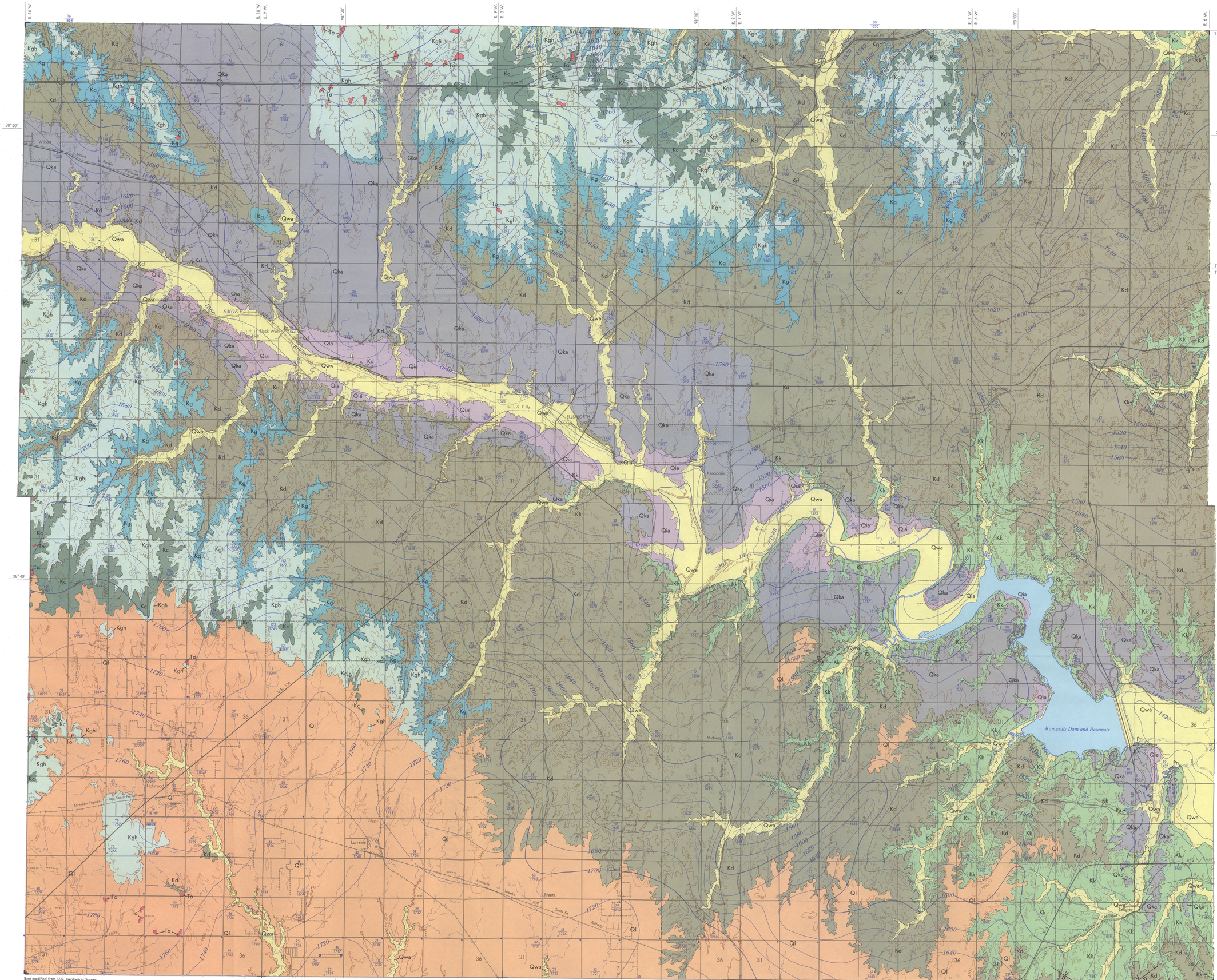
State Geological Survey
of Kansas

# GEOHYDROLOGIC MAP OF ELLSWORTH COUNTY, KANSAS

Bulletin 201
Plate 1




## EXPLANATION

### QUATERNARY SYSTEM

#### Pleistocene Series

**Qwa**

Recent alluvium and Wisconsinan fluvial deposits

Stream-laid deposits of clay, silt, sand, and gravel along principal streams. Wisconsinan age deposits occur in a terrace position to the present stream. Yields moderate quantities of water to wells in principal stream valleys and smaller quantities in tributary valleys.

**Ql**

Loess

Silt, mostly eolian. Principally Loveland loess of Illinoian age and Peoria loess of Wisconsinan age but may contain some Bignell loess of Wisconsinan age. Locally present in thin deposits in upland areas and overlies fluvial deposits in abandoned channel areas. Yields no water to wells.

**Qia**

Loveland and Crete Formations

Alluvial deposits of Illinoian age in terrace position to younger deposits in principal valleys. Composed of clay, silt, sand, and gravel. Yields small to moderate quantities of water to wells in the major valleys.

**Qka**

Sappa and Grand Island Formations

Stream-laid deposits of Kansan age consisting of clay, silt, sand, and gravel, and minor amounts of volcanic ash. In terrace position to younger deposits in Smoky Hill River valley and present in lower part of Wilson valley and abandoned channels in southwestern part of county. Locally includes the Fullerton and Holdrege Formations of Nebraskan age. Yields small to moderate quantities of water to wells locally.

### TERTIARY SYSTEM

#### Pliocene Series

**To**

Ogallala Formation

Soil caliche with distinctive pink banding occurring as thin deposits marking topography at end of Pliocene. Yields no water to wells.

### CRETACEOUS SYSTEM

#### Upper Cretaceous Series

**Kc**

Carlile Shale

Chalky shale, yellowish-gray to dark-gray, containing persistent beds of chalky limestone and nodular chalky limestone in the lower part. Thin but persistent nearly white, weathering to yellowish orange, bentonite seams are present in the formation. Only the lower part of the Carlile is present in the county. Yields no water to wells.

**Kgh**

Greenhorn Limestone

Limestone, chalky shale, and chalk, thin-bedded, yellowish-gray to gray, and yellowish-orange bentonite. Yields small quantities of water from upper weathered part in local areas.

**Kg**

Graneros Shale

Shale and clay shale, fissile, largely noncalcareous, dark-gray to bluish-black on fresh surface, weathering to yellowish brown. Contains thin sandstone beds throughout and locally thin fossiliferous limestone beds. Contains a thin but persistent bentonite bed near the top. Yields small quantities of water locally from sandstone beds.

#### Lower Cretaceous Series

**Kd**

Dakota Formation

Clay, silt, shale, sandstone, and siltstone, locally cemented with hematite and limonite. Contains lignite and locally beds of quartzitic sandstone. Colors are white, red, gray, brown, and tan. Yields small to moderate quantities of water to wells from sandstone beds.

**Kk**

Kiowa Formation

Shale, fissile, light-gray, dark-gray, and black. Contains thin sandstone bodies throughout and a persistent thick light-colored sandstone at top. Beds of cone-in-cone, quartzitic sandstone, siltstone, and thin limestone are common. A marine molluscan fauna occurs in the limestone. Yields small to moderate quantities of water to wells from the sandstone.

### PERMIAN SYSTEM

#### Lower Permian Series

**Pn**

Ninnescah Shale

Shale and siltstone, reddish-gray and gray. Poorly exposed in the county. Yields no water to wells.

Contact
Dashed where approximately located

U / D
Fault
U: upthrown side
D: downthrown side

1500
Water-table contour
Shows altitude of water table, 1964. Contour interval 20 feet. Datum is mean sea level

62 / 1796P
Upper number is depth to water, in feet below land surface. Lower number is altitude of water table, in feet above mean sea level. P indicates perched water table

Domestic or stock well

Spring

Municipal supply well

Industrial supply well

Irrigation well

Test hole

10°
True North / Magnetic North
APPROXIMATE MEAN DECLINATION, 1961

Scale 1:62 500
1 0 1 2 MILES
Contour interval 50 feet
Datum is mean sea level

Base modified from U.S. Geological Survey

Prepared by the United States Geological Survey and the State Geological Survey of Kansas, with cooperation of the Environmental Health Services of the Kansas State Department of Health and the Division of Water Resources of the Kansas State Board of Agriculture.

Geologic mapping
Tertiary and Quaternary — C. K. Bayne, 1964
Permian and Cretaceous — W. Ives, 1960; C. K. Bayne, 1964
Kiowa — Dakota contact — P. C. Franks, 1964